

CLAIMS

I/We claim:

1. A DC/DC voltage regulator that receives an input voltage and outputs a stable voltage onto an output node for use by a load, the regulator comprising:

a linear regulator controlled by a linear drop out (LDO) feedback signal, said linear regulator operative if said load is drawing less than a first predetermined amount of current;

a switch-mode regulator controlled by a switch-mode (PWM) feedback signal, said switch-mode regulator operative if said load is drawing more than a second predetermined amount of current; and

a single feedback network that provides an output node feedback signal indicative of the voltage on said output node, said feedback network including a LDO error amplifier and a PWM error amplifier, said LDO error amplifier outputting said LDO feedback signal based upon said output node feedback signal and said PWM error amplifier outputting said PWM feedback signal based on said output node feedback signal.

2. The regulator of Claim 1 wherein said first and second predetermined amounts of current are the same.

3. The regulator of Claim 1 wherein said linear regulator and said PWM regulator are in parallel with each other.

4. The regulator of Claim 1 further including a linear current sensor for sensing the current flowing through said linear regulator.

5. The regulator of Claim 1 further including a switch-mode current sensor for sensing the current flowing through said switch-mode regulator.

6. A method of receiving an input voltage and providing a stable voltage for use by a load, the method comprising:

providing a linear regulator controlled by a linear drop out (LDO) feedback signal, said linear regulator operative if said load is drawing less than a first predetermined amount of current;

providing a switch-mode regulator controlled by a switch-mode (PWM) feedback signal, said switch-mode regulator operative if said load is drawing more than a second predetermined amount of current; and

providing a single feedback network that provides an output node feedback signal indicative of the voltage on said output node, said feedback network including a LDO error amplifier and a PWM error amplifier, said LDO error amplifier outputting said LDO feedback signal based upon said output node feedback signal and said PWM error amplifier outputting said PWM feedback signal based on said output node feedback signal.

7. The method of Claim 6 wherein said first and second predetermined amounts of current are the same.

8. The method of Claim 6 wherein said linear regulator and said PWM regulator are in parallel with each other.

9. A method of receiving an input voltage and providing a stable voltage for use by a load, the method comprising:

using a linear regulator controlled by a linear drop out (LDO) feedback signal to provide said stable voltage to said load if said load is drawing less than a first predetermined amount of current;

using a switch-mode regulator controlled by a switch-mode (PWM) feedback signal to provide said stable voltage to said load if said load is drawing more than a second predetermined amount of current; and

feeding back through a single feedback network an output node feedback signal indicative of the voltage on said output node, said feedback network including a LDO error amplifier and a PWM error amplifier, said LDO error amplifier outputting said LDO feedback signal based upon said output node feedback signal and said PWM error amplifier outputting said PWM feedback signal based on said output node feedback signal.

10. The method of Claim 9 wherein said first and second predetermined amounts of current are the same.

11. The method of Claim 9 wherein said linear regulator and said PWM regulator are in parallel with each other.